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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/559,984 | 04/26/2000 | Jeffrey A. Hubbell | 50166/002001 | 1784 |

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| EXAMINER |
|---|
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| ART UNIT | PAPER NUMBER |
|---|---|
| 1615 | |

DATE MAILED: 01/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/559,984 | Applicant(s) HUBBELL ET AL. | |
|---|---|---|---|
| | Examiner Liliana Di Nola-Baron | Art Unit 1615 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *18 November 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

Receipt of Applicant's request for continued examination, filed on November 18, 2002, and entry of Applicant's amendment, filed on October 9, 2002, are acknowledged.

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding claims 1-3 and 5-21, the phrase "a physical chemical protecting group that inhibits gel formation" renders the claims indefinite, because said physical chemical protecting group is not defined in the claims and it is not clear how said group inhibits gel formation.

4. Regarding claims 2, 13, 14 and 17, the phrase "a molecule that disrupts an interaction between said physical chemical protecting group and said hydrophobic interacting groups" renders the claims indefinite, because said molecule and said physical chemical protecting group are not defined in the claims and it is not clear how said molecule disrupts the interaction.

5. Regarding claims 4 and 9, the definition of the protecting group is confusing, as it is identified as "chemical protecting group" in claim 4 and as "physical chemical protecting group" in claim 9.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1- 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parker et al. (U.S. Patent 6,218,464) in view of Jordal et al.

Parker et al. provides a method for preparing a fluorinated emulsion polymer comprising mixing the monomer mixture with a macromolecular organic compound, such as cyclodextrin and cyclodextrin derivatives (See col. 2, lines 1-17 and col. 4, lines 41-60). The examples 1-6 provided in the patent and Table 1 show that the use of cyclodextrin in the emulsion polymerization of fluorinated polymers reduces the amount of gel formed during polymerization. Thus, Parker et al. provides the general teachings that addition of cyclodextrin to fluorinated polymers prevents gel formation. Parker et al. is deficient in the fact, that it does not include a step for the hydrolysis of cyclodextrin in the method of the invention.

Jordal et al. discloses enzymatic degradation of cyclodextrin with α-amylase (See Introduction and Discussion).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the hydrogel precursors disclosed by Parker et al., by including a

molecule, such as an α-amylase, to disrupt the interaction between the polymer and cyclodextrin, as taught by Jordal et al. The expected result would have been a successful hydrogel composition and a successful method of forming said composition. Because of the teachings of Parker et al., that addition of cyclodextrin to solutions comprising fluorinated polymers reduces or eliminates gel formation, one of ordinary skill in the art would have a reasonable expectation that the compositions and methods claimed in the instant application would be successful. Therefore the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parker et al. in view of Jordal et al., as applied to claims 1-14 above, and further in view of Rhee et al. (U.S. Patent 5,324,775).

The teachings of Parker et al. and Jordal et al. have been summarized above.

Rhee et al. discloses biocompatible compositions, formed by covalently binding natural inert polymers to synthetic hydrophilic polymers, such as polyethylene glycol (See col. 2, lines 1-8). Rhee et al. includes dextrins, such as cyclodextrin, among the natural polymers used in the invention and teaches that the compositions may include active proteins, such as cytokines (See col. 2, lines 9-27). Rhee et al. teaches that the compositions are formulated in a flowable form and injected into the patient, and after injection, the carrier is removed (See col. 2, lines 48-59). Rhee et al. teaches that in order to form the conjugates of the invention, the hydrophilic polymer, specifically PEG, is functionalized by various methods (See col. 10, lines 3-38).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the hydrogel precursors disclosed by Parker et al., by including a biological agent, such as a protein, to device a method to deliver active agents into a tissue. The expected result would have been a successful method for incorporating an active agent in a hydrogel composition. Because of the teachings of Rhee et al., that compositions comprising synthetic polymers and cyclodextrin may incorporate active agents, one of ordinary skill in the art would have a reasonable expectation that the method claimed in the instant application would be successful. Therefore the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

9. Claims 15, 16 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harmer et al. (U.S. Patent 6,281,400) in view of Rhee et al.

Harmer et al. provides a process comprising preparing a liquid composition of a fluorinated polymer and removing the organic solvent by techniques known in the art (See col. 3, lines 1-26). Harmer et al. teaches that gelation of the composition occurs only after removal of the organic solvent (See col. 5, line 52 to col. 6, line 28).

Thus, Harmer et al. provides the general teachings, that fluorinated polymers may be mixed with organic solvents and gel formation occurs only after removal of the organic solvent from the solution. Harmer et al. does not specifically teach that the hydrogel can be formed in contact with a tissue and may incorporate an active agent.

Rhee et al. discloses biocompatible compositions, formed by covalently binding natural inert polymers to synthetic hydrophilic polymers, such as polyethylene glycol (See col. 2, lines 1-8). Rhee et al. includes dextrins, such as cyclodextrin, among the natural polymers used in the invention and teaches that the compositions may include active proteins, such as cytokines (See col. 2, lines 9-27). Rhee et al. teaches that the compositions are formulated in a flowable form and injected into the patient, and after injection, the carrier is removed (See col. 2, lines 48-59). Rhee et al. teaches that in order to form the conjugates of the invention, the hydrophilic polymer, specifically PEG, is functionalized by various methods (See col. 10, lines 3-38).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the hydrogel precursors disclosed by Harmer et al., by including a biological agent, such as a protein, to device a method to deliver active agents into a tissue. The expected result would have been a successful method for incorporating an active agent in a hydrogel composition. Because of the teachings of Rhee et al., that compositions comprising synthetic polymers and cyclodextrin may incorporate active agents, one of ordinary skill in the art would have a reasonable expectation that the method claimed in the instant application would be successful. Therefore the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

***Conclusion***

10. Claims 1-21 are rejected.

11. Applicant's amendment has overcome the 35 U.S.C. 102(b) and 103(a) rejections of the previous Office action. Accordingly, said rejections are withdrawn.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Liliana Di Nola-Baron whose telephone number is 703-308-8318. The examiner can normally be reached on Monday through Thursday, 5:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman K Page can be reached on 703-308-2927. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3592 for regular communications and 703-305-3592 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-1234/ 1235.

January 2, 2003

THURMAN K. PAGE
SUPERVISORY PATENT EXAMINER
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